



## CETACEAN AND SEA TURTLE TEAM NOAA BEAUFORT LABORATORY

Research conducted by the Cetacean and Sea Turtle Team is governed largely by the Marine Mammal Protection Act and the Endangered Species Act. Like other coastal species, cetaceans and sea turtles need people to balance their interests with that of other species dependent on the same environment. These laws protect all marine mammals, including dolphins, porpoises, and whales (the cetaceans), and sea turtles, in essence legislating that balance for these species. At the Beaufort Laboratory, cetacean and sea turtle research focuses on a few key areas: how many separate populations of cetaceans and sea turtles use the mid-Atlantic, what is the size of each population, how do they use the coastal areas and estuaries, how many individuals in each population die or are seriously injured due to direct human causes, and what is the potential of these populations to reproduce and recover from catastrophic events or constant human pressure. Studies at the Beaufort Lab on both groups of protected species began about 20 years ago.

The primary focus for cetacean research is the locally common bottlenose dolphin. Attention was drawn to this species as a result of a large epizootic event in 1987-88 during which it has been estimated that over half of the population died. Sea turtle research is focused on loggerheads, greens, and Kemp's ridleys. For both cetaceans and sea turtles, we are trying to determine the age structure, sex ratio, and reproductive biology of animals inhabiting local waters.

### TRACKING HUMAN IMPACTS

We are required to determine the number of incidental mortalities and entanglements of marine mammals and sea turtles in commercial gillnet fisheries in the mid-Atlantic (Virginia, Maryland, and North Carolina), which we do in collaboration with our colleagues at the National Marine Fisheries Service laboratory in Woods Hole, Massachusetts. To accomplish this goal, trained observers collect data aboard commercial fishing vessels that are likely to encounter marine mammals and sea turtles during normal fishing operations. These data provide scientists and managers with information that is helpful in determining whether or not a particular fishery is causing an unacceptable level of mortality in coastal populations of marine mammals and sea turtles.

### On the Beach: Wanted Dead or Alive



Photo by Carteret County News Times

Dolphins and whales on the beach can be considered a novelty, public hazard, or, when they are alive, a matter of great concern. A primary responsibility of the Beaufort Lab is to investigate these strandings along the North Carolina coast. Live animals are evaluated for their potential to survive and are sometimes transported, as far away as Florida, to facilities with other live dolphins for rehabilitation. For dead animals, we try to determine cause of death by conducting a thorough necropsy. We also take the opportunity to collect data and samples to help address our primary research areas, such as getting teeth for use in estimating age, reproductive organs to determine reproductive condition, skin for genetics studies, blubber for contaminant studies, stomachs to determine diet, and when a carcass is very fresh we can collect samples from many organs for pathology studies. We also provide valuable samples to researchers throughout the country; for example, we give the bones to the Smithsonian Institution. As a result, the Beaufort Laboratory has one of the most active stranding response networks in the United States.



## HOW MANY STOCKS

Management of cetaceans and sea turtles is by individual populations or stocks. Elucidating stock structure is not simple, however we are conducting a project to do so for coastal bottlenose dolphins which range from New Jersey to Florida. Due to the complexity and geographic range of the project, it involves many researchers from universities and museums, as well as other government laboratories. The comprehensive approach we've applied to address this interesting question uses multiple methods including matching of individually identified dolphins among and within sites using photographs of their dorsal fins, genetics, and movements as determined from electronic tags, such as radio (VHF) transmitters and satellite-linked transmitters.

## SEA TURTLES CALL NORTH CAROLINA THEIR HOME

Where do sea turtles occur in the waters of North Carolina? When can they be seen? And in what kinds of habitat? Sea turtles are present in offshore waters all year and enter estuaries when temperatures begin to rise in the spring. Nesting occurs on local beaches from June through August, and hatching occurs August until early October. Aerial surveys offshore and in estuary systems have confirmed these distribution patterns. In addition, use of radio and sonic telemetry has allowed us to determine how they move within these bodies of water. Cooperation from local pound net fishermen has given us access to incidentally captured turtles. From these, we tag, measure and collect blood and tissue samples for studies of stock structure, reproductive biology, growth, and population health. In addition, recaptures of tagged individuals tell us about their continued use of these habitats throughout and between years.

## HOW DO THEY GET HERE AND WHY DO THEY COME

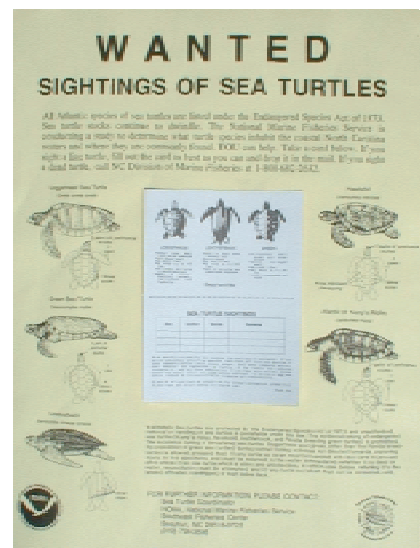
Studies on homing behavior in juvenile loggerhead sea turtles has indicated that juvenile loggerheads displaced from their capture site exhibit homeward orientation in a laboratory setting and many also returned to their capture site when released.

Sea turtles undergo multiple habitat shifts throughout their life cycles that result in major diet shifts. Analysis of stable isotope ratios indicates what a turtle was eating. Comparing the location in bone sections where these ratios change to growth layers which correspond to age is showing us when habitat shifts occur, allows us to estimate the average number of years animals spend within the major habitat types, and suggests that turtles come to the coastal areas to increase their access to food resources. By also looking at the stable isotope ratios of likely prey items, we will also be able to track sea turtle migratory patterns.

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<http://shrimp.bea.nmfs.gov>

## The Public Contributes to Sea Turtle Research



With the active boating and fishing communities in North Carolina, the public has many opportunities to encounter turtles. These sightings represent extensive field effort and are valuable to our research. Therefore, posters which provide cards for the general public to report sightings of sea turtles have been distributed through the coastal counties of North Carolina, and we still find this to be an important source of information.